Exam

Name_____

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

1) Which of the following describes the plasma membrane? 1) _____
A) a single-layered membrane that surrounds the nucleus of the cell
B) the phospholipid bilayer surrounding the cell
C) a double layer of protein enclosing the plasma
D) a membrane composed of tiny shelves or cristae

Answer: B
Explanation: A)
B)
C)
D)

2) Peroxisomes _____. 2) _____
A) are able to detoxify substances by enzymatic action
B) sometimes function as secretory vesicles
C) are also called microbodies, and contain acid hydrolases
D) function to digest particles ingested by endocytosis

Answer: A
Explanation: A)
B)
C)
D)

3) Which of the following is true regarding the generation of a membrane potential? 3) _____
A) The maintenance of the potential is based exclusively on diffusion processes.
B) When the sodium-potassium pump is activated, potassium is pumped into the cell twice as fast as the sodium is pumped out, thus causing the membrane potential.
C) In the polarized state, sodium and potassium ion concentrations are in static equilibrium.
D) Both potassium and sodium ions can "leak" through the cell membrane due to diffusion.

Answer: D
Explanation: A)
B)
C)
D)

4) In the maintenance of the cell resting membrane potential _____. 4) _____
A) extracellular sodium levels are high
B) the steady state involves only passive processes in all cells
C) the inside of the cell is positive relative to its outside
D) cells are more permeable to Na^+ than K^+

Answer: A
Explanation: A)
B)
C)
D)

5) The main component of the cytosol is _____. 5) _____

A) sugars B) water C) salts D) proteins

Answer: B

Explanation: A)
B)
C)
D)

6) A red blood cell placed in pure water would _____. 6) _____

A) shrink
B) swell and burst
C) neither shrink nor swell
D) swell initially, then shrink as equilibrium is reached

Answer: B

Explanation: A)
B)
C)
D)

7) Which of the following does *not* serve as a signal for cell division? 7) _____

A) surface-to-volume ratio B) joining of cyclins and Cdks
C) contact inhibition D) repressor genes

Answer: D

Explanation: A)
B)
C)
D)

8) Some hormones enter cells via _____. 8) _____

A) receptor-mediated endocytosis B) exocytosis
C) pinocytosis D) endocytosis

Answer: A

Explanation: A)
B)
C)
D)

9) Mitochondria _____. 9) _____

A) synthesize proteins for use outside the cell
B) contain some of the DNA and RNA code necessary for their own function
C) are single-membrane structures involved in the breakdown of ATP
D) are always the same shape

Answer: B

Explanation: A)
B)
C)
D)

10) Passive membrane transport processes include _____. 10) _____

A) consumption of ATP
B) the use of transport proteins when moving substances from areas of low to high concentration
C) movement of a substance down its concentration gradient
D) movement of water from an area of low concentration to an area of high concentration

Answer: C
Explanation: A)
B)
C)
D)

11) Cell junctions that promote the coordinated activity of cells by physically binding them together into a cell community include all of the following *except* _____. 11) _____

A) peroxisomes B) desmosomes C) tight junctions D) gap junctions

Answer: A
Explanation: A)
B)
C)
D)

12) The electron microscope has revealed that one of the components within the cell consists of microtubules arranged to form a hollow tube. This structure is a _____. 12) _____

A) centriole B) chromosome C) centrosome D) ribosome

Answer: A
Explanation: A)
B)
C)
D)

13) Lysosomes _____. 13) _____

A) are the major site of protein synthesis
B) are always used for the cell to "commit suicide"
C) maintain a highly alkaline internal environment
D) contain acid hydrolases that are potentially dangerous to the cell

Answer: D
Explanation: A)
B)
C)
D)

14) Which of the following is a function of a plasma membrane protein? 14) _____

A) molecular transport through the membrane
B) forms a lipid bilayer
C) oxygen transport
D) circulating antibody

Answer: A
Explanation: A)
B)
C)
D)

15) Which of the following is a principle of the fluid mosaic model of cell membrane structure? 15) _____
A) The lipid bilayer is a solid at body temperature, thus protecting the cell.
B) All proteins associated with the cell membrane are contained in a fluid layer on the outside of the cell.
C) Phospholipids form a bilayer that is largely impermeable to water-soluble molecules.
D) Phospholipids consist of a polar head and a nonpolar tail made of three fatty acid chains.

Answer: C
Explanation: A)
B)
C)
D)

16) If the nucleotide or base sequence of the DNA strand used as a template for messenger RNA synthesis is ACGTT, then what would be the sequence of bases in the corresponding mRNA? 16) _____
A) GUACC B) UGCAA C) TGCAA D) ACGTT

Answer: B
Explanation: A)
B)
C)
D)

17) Enzymes called _____ destroy the cell's DNA and cytoskeleton, producing a quick death of the cell. 17) _____
A) ubiquitins B) caspases
C) DNA polymerase III D) cyclins

Answer: B
Explanation: A)
B)
C)
D)

18) Once solid material is phagocytized and taken into a vacuole, which of the following statements best describes what happens? 18) _____
A) The vacuole remains separated from the cytoplasm and the solid material persists unchanged.
B) Nitrogen enters the vacuole and "burns" the enclosed solid material.
C) A ribosome enters the vacuole and uses the amino acids in the "invader" to form new protein.
D) A lysosome combines with the vacuole and digests the enclosed solid material.

Answer: D
Explanation: A)
B)
C)
D)

19) Which statement best describes transcytosis? 19) _____

A) storing the contents of the endosome
B) transporting an endosome from one side of a cell to the other and releasing the contents by exocytosis
C) combining an endosome with a lysosome and degrading or releasing the contents
D) recycling the contents of the endosome back to the surface of the cell

Answer: B
Explanation: A)
B)
C)
D)

20) Mitosis _____. 20) _____

A) creates diversity in genetic potential
B) produces nucleus replication
C) is the formation of sex cells
D) always results in division of a cell

Answer: B
Explanation: A)
B)
C)
D)

21) The endomembrane system is _____. 21) _____

A) the process by which bacteria took up residence in ancient cells
B) an interactive system of organelles whose membranes are physically or functionally connected
C) a system of hydrophilic lipid monolayers that surround many cell organelles
D) a system by which cells are riveted together by desmosomes

Answer: B
Explanation: A)
B)
C)
D)

22) Ribosomes, endoplasmic reticulum, and the Golgi apparatus functionally act in sequence to synthesize and modify proteins for secretory use (export) only, never for use by the cell. This statement is _____. 22) _____

A) false; lipids, not proteins, are synthesized this way
B) false; proteins thus manufactured are for use inside the cell only
C) false; integral cell membrane proteins are also synthesized this way
D) true

Answer: C
Explanation: A)
B)
C)
D)

23) DNA replication _____. 23) _____

A) takes place during interphase of the cell cycle
B) can also be called mitosis
C) is spontaneous, not requiring enzyme action
D) occurs only in translationally active areas

Answer: A
Explanation: A)
B)
C)
D)

24) The functions of centrioles include _____. 24) _____

A) organizing the mitotic spindle in cell division
B) providing a whiplike beating motion to move substances along cell surfaces
C) producing ATP
D) serving as the site for ribosomal RNA synthesis

Answer: A
Explanation: A)
B)
C)
D)

25) Which of the following is *not* a subcellular structure? 25) _____

A) membranes
B) intercellular material
C) cytoplasm
D) organelles

Answer: B
Explanation: A)
B)
C)
D)

26) Caveolae are closely associated with all but which of the following? 26) _____

A) receptors for hormones
B) enzymes involved in cell metabolism
C) lipid rafts
D) enzymes involved in cell regulation

Answer: B
Explanation: A)
B)
C)
D)

27) Which statement is the most correct regarding transcription/translation? 27) _____

A) The nucleotide sequence in a tRNA anticodon is an exact copy of the DNA triplet that coded for it except that uracil is substituted for thymine.

B) The nucleotide sequence in a mRNA codon is an exact copy of the DNA triplet that coded for it.

C) The nucleotide sequence in a tRNA anticodon is an exact copy of the DNA triplet that coded for it.

D) The nucleotide sequence in a mRNA codon is an exact copy of the DNA triplet that coded for it except that uracil is substituted for thymine.

Answer: A

Explanation: A)
B)
C)
D)

28) Which structures are fingerlike projections that greatly increase the absorbing surface of cells? 28) _____

A) cilia B) microvilli C) flagella D) stereocilia

Answer: B

Explanation: A)
B)
C)
D)

29) Which of the following is *not* a factor that binds cells together? 29) _____

A) glycoproteins in the glycocalyx

B) special membrane junctions

C) wavy contours of the membranes of adjacent cells

D) glycolipids in the glycocalyx

Answer: D

Explanation: A)
B)
C)
D)

30) In certain kinds of muscle cells, calcium ions are stored in _____. 30) _____

A) both smooth and rough ER B) the cytoplasm

C) the smooth ER D) the rough ER

Answer: C

Explanation: A)
B)
C)
D)

31) Which of the following would *not* be a constituent of a plasma membrane? 31) _____

A) glycoproteins B) messenger RNA

C) glycolipids D) phospholipids

Answer: B

Explanation: A)
B)
C)
D)

32) Extracellular matrix is _____. 32) _____

A) not present in connective tissue
B) the most abundant extracellular material
C) a type of impermeable cell junction found in epithelia
D) composed of strands of actin protein

Answer: B
Explanation: A)
B)
C)
D)

33) The RNA responsible for bringing the amino acids to the "factory" site for protein formation is _____. 33) _____

A) ssRNA B) mRNA C) rRNA D) tRNA

Answer: D
Explanation: A)
B)
C)
D)

34) A gene can best be defined as _____. 34) _____

A) an RNA messenger that codes for a particular polypeptide
B) a three-base triplet that specifies a particular amino acid
C) noncoding segments of DNA up to 100,000 nucleotides long
D) a segment of DNA that carries the instructions for one polypeptide chain

Answer: D
Explanation: A)
B)
C)
D)

35) Which of the following is a concept of the cell theory? 35) _____

A) A cell is the basic structural and functional unit of living organisms.
B) The subcellular organelle is the basic unit of life.
C) Only higher organisms are composed of cells.
D) Simple cells can arise spontaneously from rotting vegetation.

Answer: A
Explanation: A)
B)
C)
D)

36) If cells are placed in a hypertonic solution containing a solute to which the membrane is impermeable, what could happen? 36) _____

A) The cells will shrink at first, but will later reach equilibrium with the surrounding solution and return to their original condition.
B) The cells will swell and ultimately burst.
C) The cells will lose water and shrink.
D) The cells will show no change due to diffusion of both solute and solvent.

Answer: C
Explanation: A)
B)
C)
D)

37) Which of the following statements is most correct regarding the intracellular chemical signals known as "second messengers"? 37) _____

A) Second messengers usually inactivate protein kinase enzymes.
B) Second messengers usually act to remove nitric oxide (NO) from the cell.
C) Second messengers act through receptors called K-proteins.
D) Cyclic AMP and calcium may be second messengers.

Answer: D
Explanation: A)
B)
C)
D)

38) If a tRNA had an AGC anticodon, it could attach to a(n) _____ mRNA codon. 38) _____

A) UGA B) TCG C) UCG D) AUG

Answer: C
Explanation: A)
B)
C)
D)

39) Which of these is an inclusion, *not* an organelle? 39) _____

A) microtubule B) cilia C) melanin D) lysosome

Answer: C
Explanation: A)
B)
C)
D)

40) Which of these is *not* a function of the plasma membrane? 40) _____

A) It prevents potassium ions from leaking out and sodium ions from crossing into the cell.
B) It acts as a site of cell-to-cell interaction and recognition.
C) It encloses the cell contents.
D) It is selectively permeable.

Answer: A
Explanation: A)
B)
C)
D)

41) Which of the following statements is correct regarding diffusion? 41) _____

A) The lower the temperature, the faster the diffusion rate.
B) The greater the concentration of gradient, the faster the rate of diffusion.
C) Molecular weight of a substance does not affect the rate of diffusion.
D) The rate of diffusion is independent of temperature.

Answer: B
Explanation: A)
B)
C)
D)

42) Riboswitches are folded RNAs that act as switches to turn protein synthesis on or off in response to _____. 42) _____

A) specific codes from the DNA
B) specific tRNAs
C) the presence or absence of ubiquitins
D) changes in the environment

Answer: D
Explanation: A)
B)
C)
D)

43) Crenation is likely to occur in blood cells in _____. 43) _____

A) a hypotonic solution
B) a hypertonic solution
C) blood plasma
D) an isotonic solution

Answer: B
Explanation: A)
B)
C)
D)

44) Which transport process is the main mechanism for the movement of most macromolecules by body cells? 44) _____

A) phagocytosis
B) pinocytosis
C) secondary active transport
D) receptor-mediated endocytosis

Answer: D
Explanation: A)
B)
C)
D)

45) Which of the following statements is correct regarding RNA? 45) _____

A) Messenger RNA, transfer RNA, and ribosomal RNA play a role in protein synthesis.
B) There is exactly one specific type of mRNA for each amino acid.
C) If the base sequence of DNA is ATTGCA, the messenger RNA template will be UCCAGU.
D) rRNA is always attached to the rough ER.

Answer: A
Explanation: A)
B)
C)
D)

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

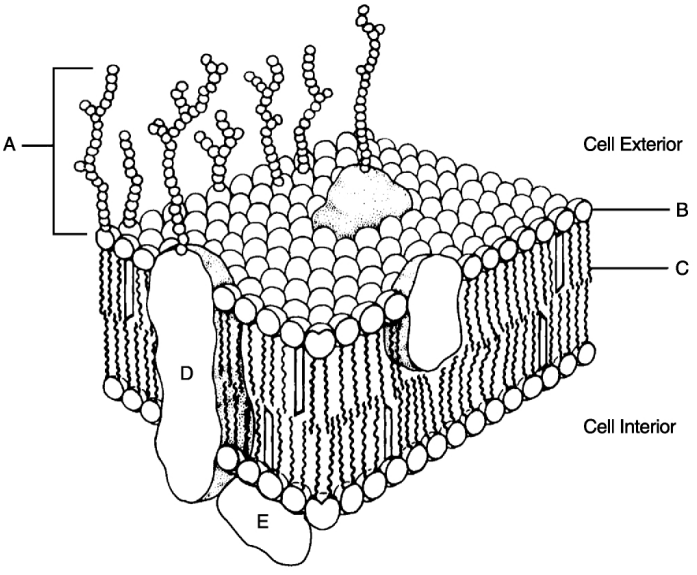

Figure 3.2

Using Figure 3.2, match the following:

46) Integral protein. 46) _____

Answer: D
Explanation:

47) How is the resting potential formed? How is it maintained? 47) _____

Answer: It is formed by diffusion of ions resulting in ionic imbalances that polarize the membrane. It is maintained by active transport processes.
Explanation:

48) Aerobic cellular respiration occurs in the _____. 48) _____

Answer: mitochondria
Explanation:

49) What are cell exons and introns? 49) _____

Answer: Exons are amino acid-specifying informational sequences in genes. Introns are noncoding gene segments that provide a reservoir of ready-to-use DNA segments for genome evolution and a source of a large variety of RNA molecules.
Explanation:

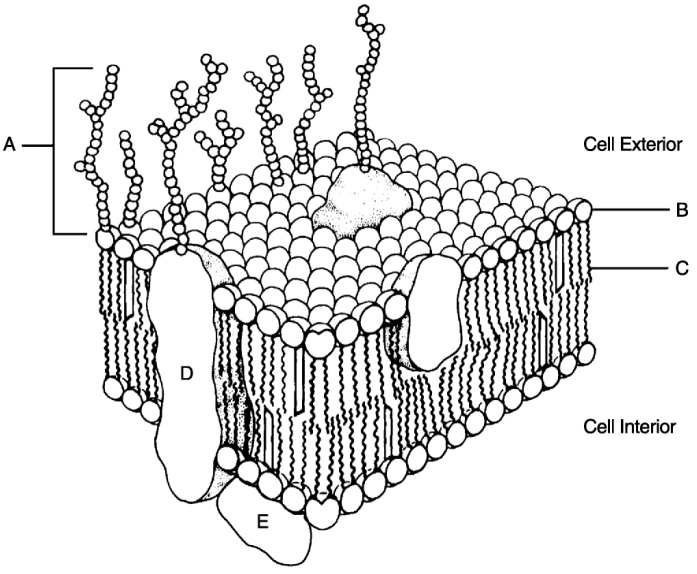

Figure 3.2

Using Figure 3.2, match the following:

50) Glycocalyx. 50) _____

Answer: A

Explanation:

51) What are lipid rafts? What are their functions? 51) _____

Answer: They are assemblies of saturated phospholipids associated with sphingolipids and cholesterol. They are concentrating platforms for molecules needed for cell signaling.

Explanation:

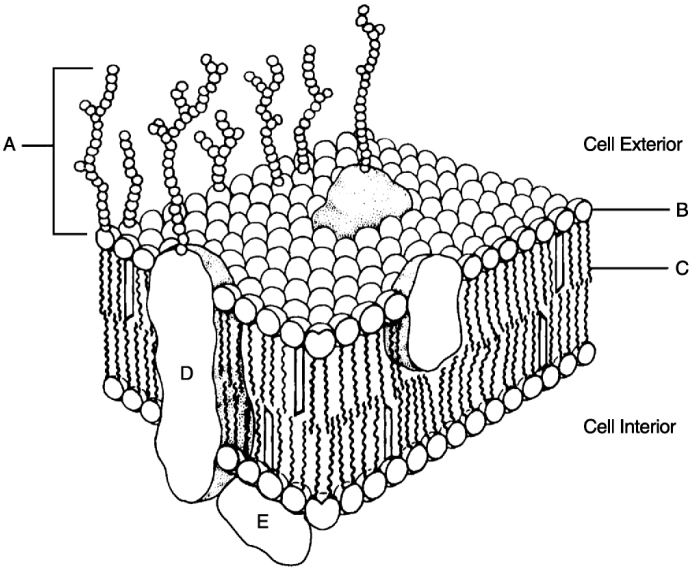

Figure 3.2

Using Figure 3.2, match the following:

52) Peripheral protein. 52) _____

Answer: E
Explanation:

53) Two very important second messengers used in the G protein-linked receptor mechanism are cyclic AMP and _____. 53) _____

Answer: ionic calcium
Explanation:

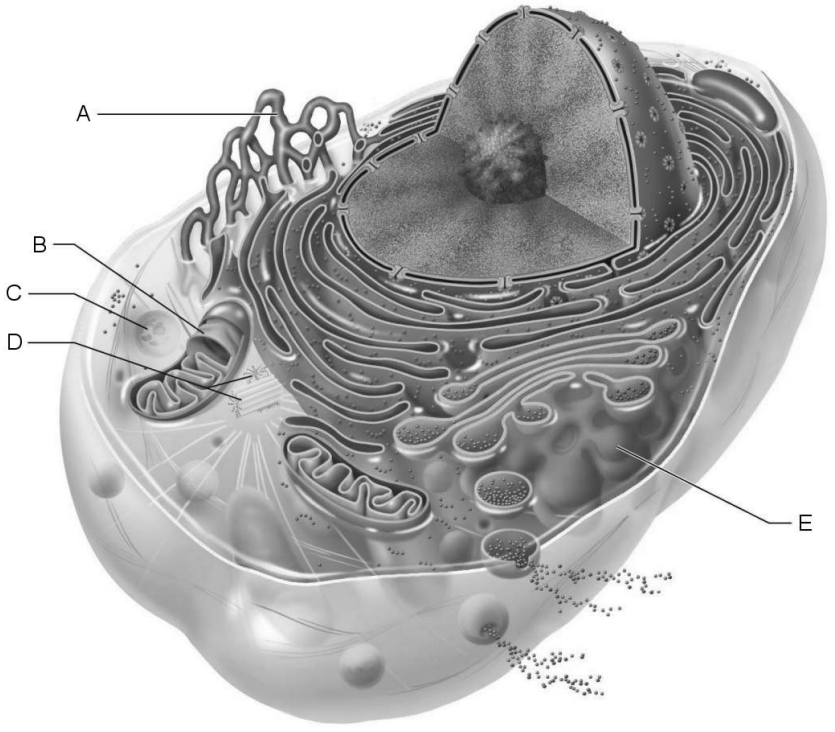

Figure 3.1

Using Figure 3.1, match the following:

54) Packages proteins for insertion in the cell membrane or for exocytosis. 54) _____

Answer: E
Explanation:

55) In all living cells hydrostatic and osmotic pressures exist. Define these pressures and explain how they are used in the concept of tonicity of the cell. 55) _____

Answer: Hydrostatic pressure is the pressure of water exerted on the cell membrane. Osmotic pressure is created by different concentrations of molecules in a solution separated by the cell membrane. Because these pressures are exerted on the membrane they can be used by the cell to change the shape of the cell, regulate substances entering and exiting the cell, and bring about the polarity of the cell.
Explanation:

56) What are nucleolar organizer regions? 56) _____

Answer: nuclear regions containing the DNA that issues genetic instructions for synthesizing ribosomal RNA
Explanation:

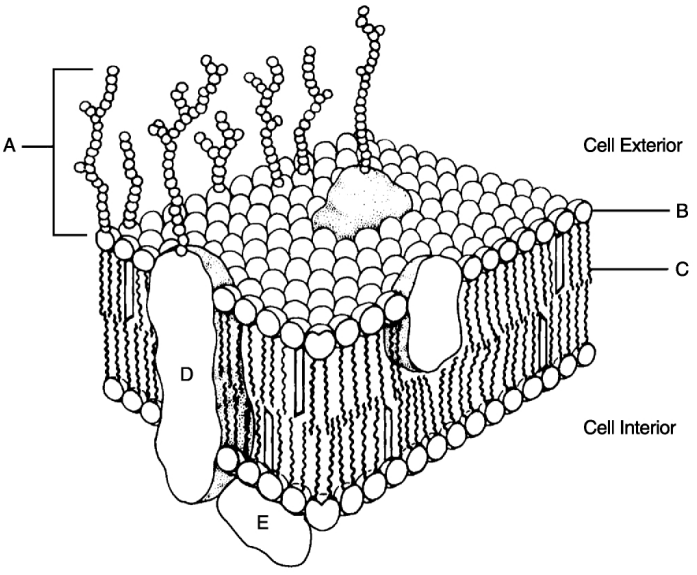

Figure 3.2

Using Figure 3.2, match the following:

57) Identification "tags" for the cell. 57) _____

Answer: A
Explanation:

58) Why are free radicals so dangerous to cells, and how are they dealt with by the body? 58) _____

Answer: Free radicals are highly reactive chemicals that cause havoc in any cellular environment by reacting with things they should not. Cells with peroxisomes have enzymes specific to reducing free radicals into less reactive chemicals.
Explanation:

59) Why can we say that cells are protein factories? 59) _____

Answer: Most of the metabolic machinery of the cell is involved in protein synthesis since structural proteins constitute most of the cell dry material and functional proteins direct all cellular activities.
Explanation:

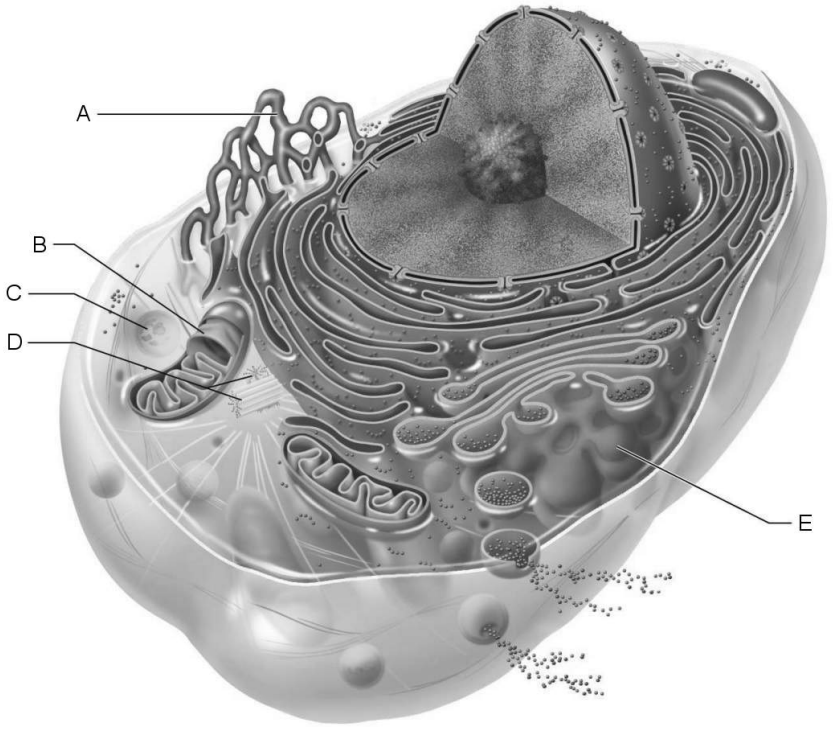

Figure 3.1

Using Figure 3.1, match the following:

60) Site of enzymatic breakdown of phagocytized material. 60) _____
Answer: C
Explanation:

61) Describe two important functions of the Golgi apparatus. 61) _____
Answer: To modify, sort, and package proteins.
Explanation:

62) Why can we say that a cell without a nucleus will ultimately die? 62) _____
Answer: Without a nucleus, a cell cannot make proteins, nor can it replace any enzymes or other cell structures (which are continuously recycled). Additionally, such a cell could not replicate.
Explanation:

63) How are the products of free ribosomes different from membrane-bound ribosomes? 63) _____
Answer: Free ribosomes make soluble proteins that function in the cytosol. Membrane-bound ribosomes produce proteins that are to be used on the cell membrane or exported from the cell.
Explanation:

64) Explain the term *genetic code.* What does it code for? What are the letters of the code? 64) _____
Answer: The genetic code is the information encoded in the nucleotide base sequence of DNA. A sequence of three bases, called a triplet, specifies amino acid in a protein. The letters of the code are the four nucleotide bases of DNA designated as A, T, C, and G.
Explanation:

65) List the steps in the process of transcription. 65) _____

Answer: initiation, elongation, transcription
Explanation:

66) The most common extracellular ion is _____. 66) _____

Answer: sodium
Explanation:

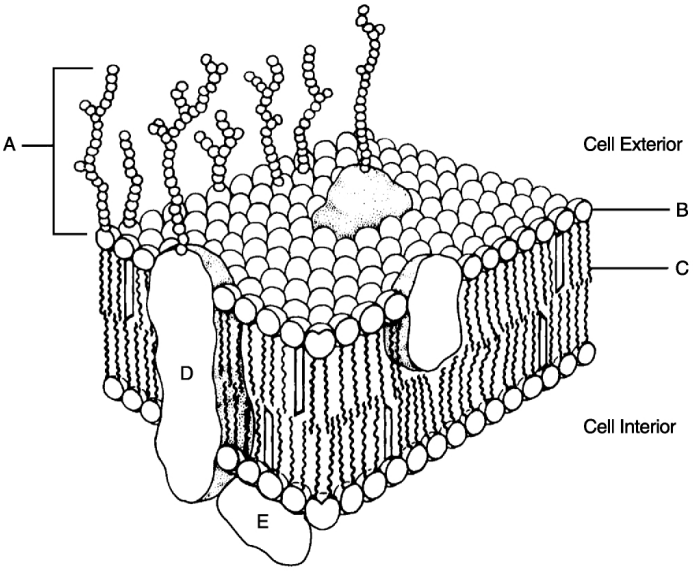

Figure 3.2

Using Figure 3.2, match the following:

67) Nonpolar region of phospholipid. 67) _____

Answer: C
Explanation:

68) In order for the DNA molecule to get "short and fat" to become a chromosome, it must first wrap around small molecules called _____. 68) _____

Answer: histones
Explanation:

69) Briefly describe the glycocalyx and its functions. 69) _____

Answer: The glycocalyx is the sticky, carbohydrate-rich area on the cell surface. It helps bind cells together and provides a highly specific biological marker by which cells can recognize each other.
Explanation:

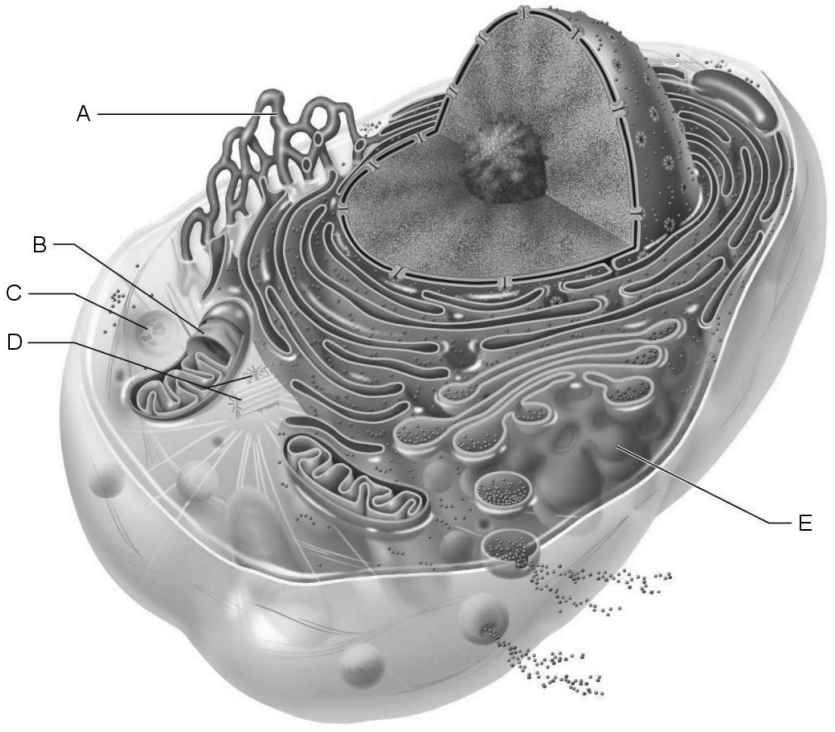

Figure 3.1

Using Figure 3.1, match the following:

70) Produces ATP aerobically. 70) _____

Answer: B
Explanation:

71) What forces maintain a steady state "resting" membrane potential? 71) _____

Answer: Both diffusion and active transport mechanisms operate within the cell membrane to maintain a resting membrane potential.
Explanation:

72) What is the common route of entry for flu viruses into a cell? 72) _____

Answer: Flu viruses and diphtheria toxins use receptor-mediated endocytosis. The virus can attach to the receptors or to the substances the receptors accept to "hitch a ride" into the cell.
Explanation:

73) _____ is the division of the cytoplasmic mass into two parts. 73) _____

Answer: Cytokinesis
Explanation:

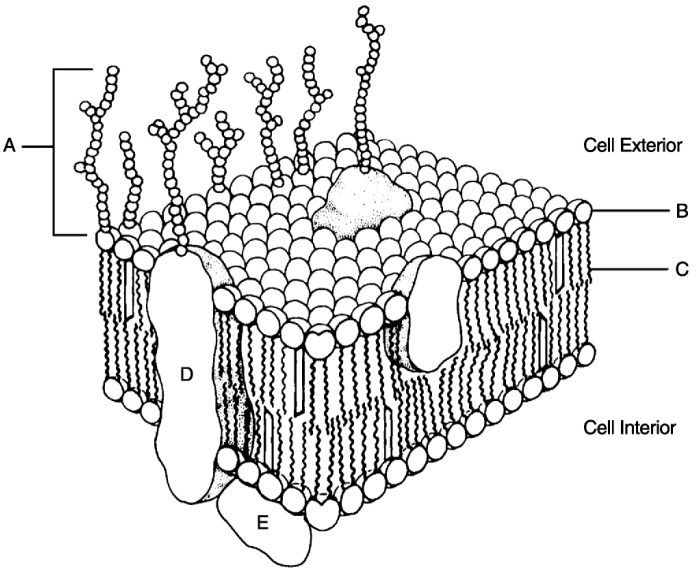

Figure 3.2

Using Figure 3.2, match the following:

74) Polar region of phospholipid. 74) _____

Answer: B
Explanation:

75) Other than the nucleus, which organelle has its own DNA? 75) _____

Answer: Mitochondria.
Explanation:

76) The RNA that has an anticodon and attaches to a specific amino acid is _____ RNA. 76) _____

Answer: transfer
Explanation:

77) List possible causes of aging. 77) _____

Answer: 1. chemical insults and free radical formation (wear and tear theory)
2. diminished energy production by free radical-damaged mitochondria
3. progressive disorders in the immune system
4. genetic programming
Explanation:

78) What factors contribute to the fragility of the lysosome and subsequent cell autolysis? 78) _____

Answer: cell injury, cell oxygen deprivation, presence of excessive amounts of vitamin A in the cell
Explanation:

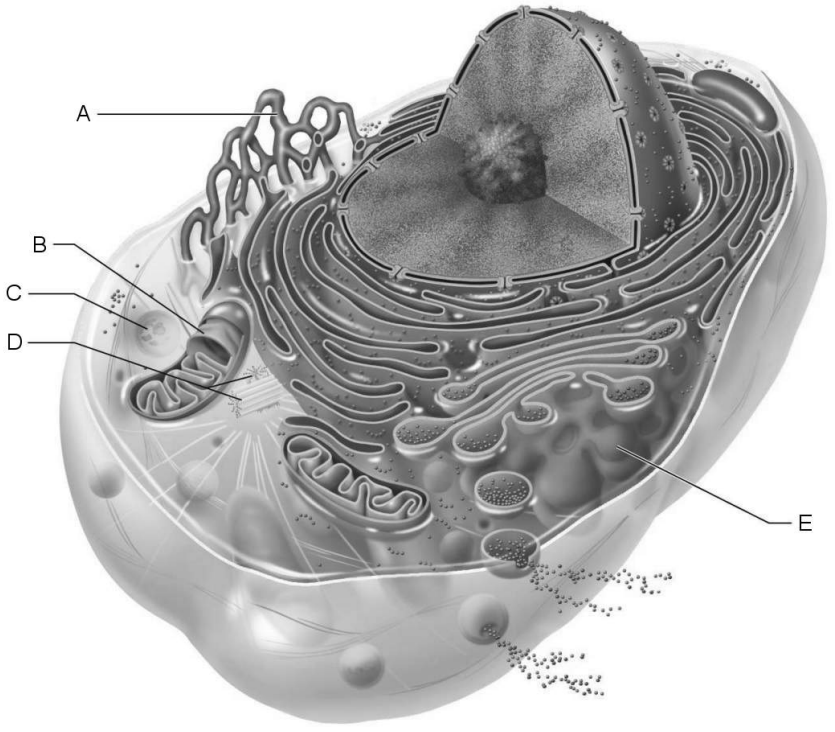

Figure 3.1

Using Figure 3.1, match the following:

79) Forms the mitotic spindle. 79) _____

Answer: D
Explanation:

80) A _____ is a channel between cells. 80) _____

Answer: connexon
Explanation:

81) Are Brownian motion, diffusion, and osmosis seen only in living tissue? 81) _____

Answer: No. Because they are passive processes that do not require energy, they can occur in the absence of any cellular processes.
Explanation:

82) The process of discharging particles from inside a cell to the outside is called _____. 82) _____

Answer: exocytosis
Explanation:

83) A red blood cell would swell if its surrounding solution were _____. 83) _____

Answer: hypotonic
Explanation:

84) How are peroxisomes different from lysosomes? 84) _____

Answer: Some of the peroxisomes are oxidases that use oxygen to detoxify harmful substances. They are very good at neutralizing free radicals. Peroxisomes divide by simply budding. Lysosomes have powerful hydrolytic enzymes that will pretty much destroy anything they come in contact with. They are manufactured by the Golgi apparatus.

Explanation:

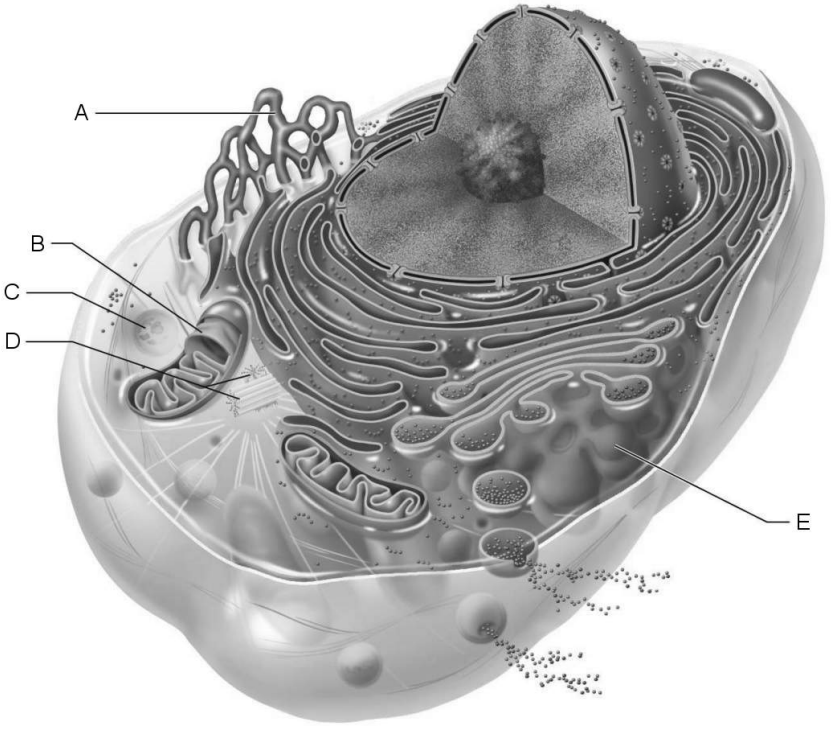

Figure 3.1

Using Figure 3.1, match the following:

85) Replicate for cell division. 85) _____

Answer: D

Explanation:

86) _____ are hollow tubes made of spherical protein subunits called tubulins. 86) _____

Answer: Microtubules

Explanation:

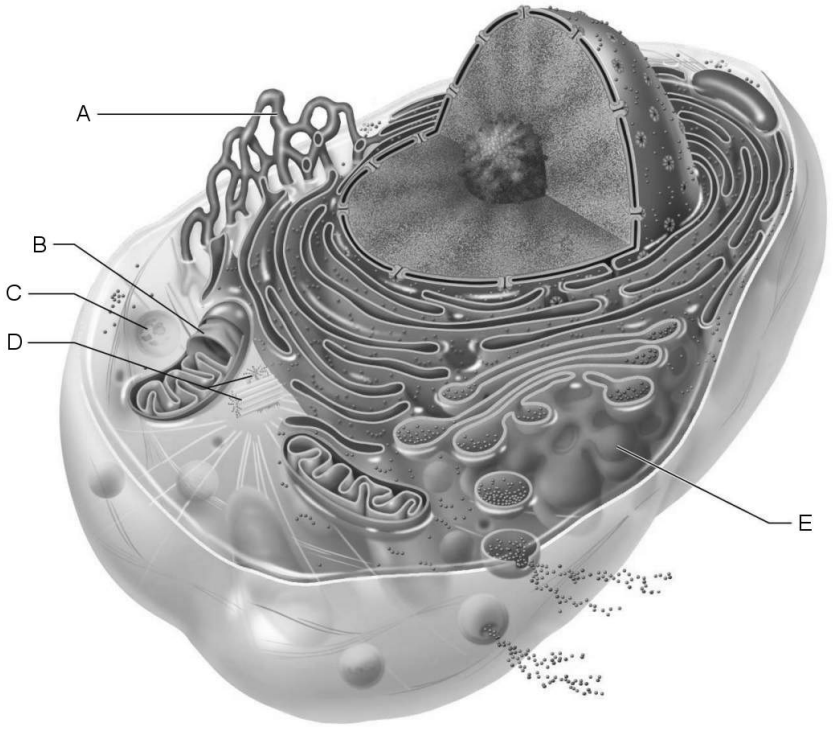

Figure 3.1

Using Figure 3.1, match the following:

87) Site of synthesis of lipid and steroid molecules. 87) _____

Answer: A
Explanation:

88) The metabolic or growth phase of a cell life cycle is called _____. 88) _____

Answer: interphase
Explanation:

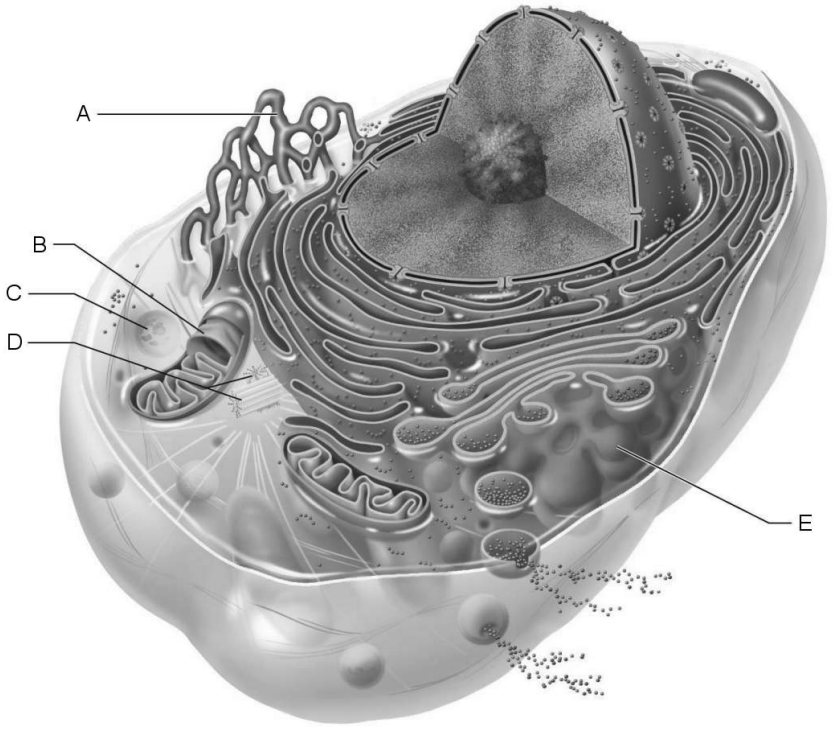

Figure 3.1

Using Figure 3.1, match the following:

89) Source of cell autolysis. 89) _____

Answer: C
Explanation:

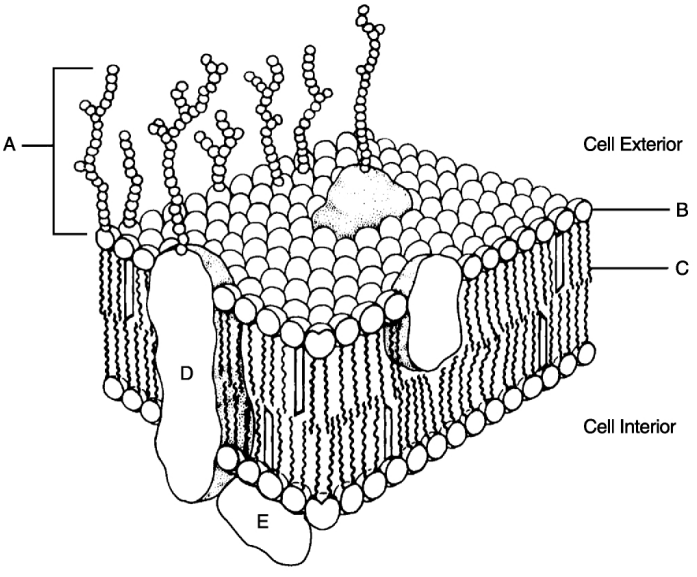

Figure 3.2

Using Figure 3.2, match the following:

90) Hydrophilic portion. 90) _____

Answer: B
Explanation:

91) Water may move through membrane pores constructed by transmembrane proteins called _____. 91) _____

Answer: aquaporins
Explanation:

92) Briefly name the subphases of interphase and tell what they do. 92) _____

Answer: G1 - growth phase. The cell is metabolically active and the centriole begins to divide at the end of this phase.
S - DNA replicates itself. New histones are made and assembled into chromatin.
G2 - Enzymes and proteins are synthesized and centriole replication is completed. This is the final phase of interphase.
Explanation:

TRUE/FALSE. Write 'T' if the statement is true and 'F' if the statement is false.

93) Facilitated diffusion always requires a carrier protein. 93) _____

Answer: True ✓ False
Explanation:

94) Telomeres are the regions of chromosomes that code for the protein ubiquitin. 94) _____

Answer: True ✓ False
Explanation:

95) Chromatin consists of DNA and RNA. 95) _____

Answer: True ✓ False
Explanation:

96) Aquaporins are believed to be present in red blood cells and kidney tubules, but very few other cells in the body. 96) _____

Answer: True ✓ False
Explanation:

97) Only one cell type in the human body has a flagellum. 97) _____

Answer: ✓ True False
Explanation:

98) Microfilaments are thin strands of the contractile protein myosin. 98) _____

Answer: True ✓ False
Explanation:

99) The cell (plasma) membrane normally contains substantial amounts of cholesterol. 99) _____

Answer: ✓ True False
Explanation:

100) In their resting state, all body cells exhibit a resting membrane potential ranging from -50 to about +50 millivolts. 100) _____

Answer: True ✓ False
Explanation:

101) Each daughter cell resulting from mitotic cell division has exactly as many chromosomes as the parent cell. 101) _____

Answer: True False
Explanation:

102) The genetic information is coded in DNA by the regular alternation of sugar and phosphate molecules. 102) _____

Answer: True False
Explanation:

103) The glycocalyx is often referred to as the "cell coat," which is somewhat fuzzy and sticky with numerous cholesterol chains sticking out from the surface of the cell membrane. 103) _____

Answer: True False
Explanation:

104) Final preparation for cell division is made during the cell life cycle subphase called G_2. 104) _____

Answer: True False
Explanation:

105) Apoptosis is programmed cell suicide, but cancer cells fail to undergo apoptosis. 105) _____

Answer: True False
Explanation:

106) Diffusion is always from areas of greater to areas of lesser concentration. 106) _____

Answer: True False
Explanation:

107) DNA contains "dark matter" that codes for specific structural proteins. 107) _____

Answer: True False
Explanation:

108) In osmosis, movement of water occurs toward the solution with the lower solute concentration. 108) _____

Answer: True False
Explanation:

109) Interstitial fluid represents one type of extracellular material. 109) _____

Answer: True False
Explanation:

110) Microtubules are hollow tubes made of subunits of the protein tubulin. 110) _____

Answer: True False
Explanation:

111) Nitric oxide may act as a biological messenger. 111) _____

Answer: True False
Explanation:

112) Most organelles are bounded by a membrane that is quite different in structure from the lipid bilayer of the plasma membrane. 112) _____

Answer: True ✓ False
Explanation:

113) The orderly sequence of the phases of mitosis is prophase, metaphase, anaphase, and telophase. 113) _____

Answer: ✓ True False
Explanation:

114) DNA transcription is another word for DNA replication. 114) _____

Answer: True ✓ False
Explanation:

115) A process by which large particles may be taken into the cell for food, protection of the body, or for disposing of old or dead cells is called phagocytosis. 115) _____

Answer: ✓ True False
Explanation:

MATCHING. Choose the item in column 2 that best matches each item in column 1.

Match the following:

116) Type of anchoring junction. A) Desmosomes 116) _____

Answer: A

Match the following:

117) Forms part of the protein synthesis site in the cytoplasm. A) Ribosomal RNA 117) _____

Answer: A

Match the following:

118) Chromosomes align on the spindle equator. A) Metaphase 118) _____

Answer: A

Match the following:

119) Act as "interpreter" molecules that recognize specific amino acids and nucleotide base sequences. A) Transfer RNA 119) _____

Answer: A

Match the following:

120) Chromosomal centromeres split and chromosomes migrate to opposite ends of the cell. A) Anaphase 120) _____

Answer: A

Match the following:

121) Help prevent molecules from passing through the extracellular space between adjacent cells.
Answer: A

A) Tight junctions

121) _____

Match the following:

122) The actual site of protein synthesis.
Answer: A

123) Plays a role in the synthesis of steroid-based hormones and proteins.
Answer: B

124) Dense spherical bodies in the nucleus that are the synthesis site for ribosomal RNA.
Answer: C

A) Ribosomes

B) Endoplasmic reticulum

C) Nucleoli

122) _____

123) _____

124) _____

Match the following:

125) Found in the cytoplasm, this structure specifies the exact sequence of amino acids of the protein to be made.
Answer: B

126) Attaches the correct amino acid to its transfer RNA.
Answer: A

A) Synthetase enzymes

B) Messenger RNA

125) _____

126) _____

Match the following:

127) Hollow cytoskeletal elements that act as organizers for the cytoskeleton.
Answer: A

A) Microtubules

127) _____

Match the following:

128) Nuclear membrane and nucleolus disintegrate.
Answer: B

129) Chromosomes decoil to form chromatin.
Answer: A

A) Telophase

B) Late prophase

128) _____

129) _____

Match the following:

130) Present in electrically excitable tissues. 130) _____
Answer: B

131) Communicating junction. 131) _____
Answer: B

132) Abundant in tissues subjected to great mechanical stress. 132) _____
Answer: A

A) Desmosomes
B) Gap junctions

Match the following:

133) Centrioles move to opposite ends of the cell. 133) _____
Answer: A

A) Early prophase

Match the following:

134) Houses DNA and RNA. 134) _____
Answer: A

A) Nucleus

Match the following:

135) May be attached to the ER or scattered in the cytoplasm. 135) _____
Answer: B

136) Provides the energy needed for synthesis reactions. 136) _____
Answer: A

A) ATP
B) Ribosomal RNA

ESSAY. Write your answer in the space provided or on a separate sheet of paper.

137) Describe the difference in cell division between normal cells and cancer cells.
Answer: Normal cells divide in two distinct events—mitosis and cytokinesis. Cancer cells divide wildly, which makes them dangerous to their host.

138) Your patient has a respiratory disease that has literally paralyzed the cilia. Explain why this patient would be at an increased risk for a respiratory infection.
Answer: Ciliated cells that live in the respiratory tract propel mucus, laden with dust particles and bacteria, upward and away from the lungs. If the cilia are paralyzed, bacteria remain in the lungs and may cause infection.

139) You are giving a tap water enema to a patient. An adverse effect of the tap water enema is water intoxication. Explain.
Answer: A tap water enema is a hypotonic solution. Based on osmosis, water diffuses to the solution of higher concentration, leading to water intoxication.

140) Your patient has the flu and reports 5—6 loose stools a day. He has experienced an isotonic fluid volume loss. Explain what an isotonic fluid loss means.
Answer: An isotonic fluid volume loss occurs when water and electrolytes are lost in equal proportion.

141) Research shows that neurofibrillary tangles are the primary cause of Alzheimer's disease. Neurofibrillary tangles are associated with microtubules. Based on your knowledge of microtubules, explain what may happen to microtubules to cause Alzheimer's disease.

Answer: Microtubules determine the overall shape of the cell, among other things. They are dynamic organelles constantly growing from the centrosome, dissembling, and then reassembling. In Alzheimer's disease the structure of the microtubule collapses.

142) The patient was admitted to the hospital for severe dehydration. Explain what changes occur in extracellular and intracellular fluid compartments during dehydration.

Answer: Fluid volume deficit occurs when the body loses both water and electrolytes from the extracellular fluid compartment. Fluid is initially lost from the intravascular compartment. Then fluid is drawn from the interstitial compartment into the intravascular compartment, depleting the interstitial compartment. To compensate for the decreased volume, the body then draws intracellular fluid out of the cells. This could lead to collapse and death.

1) B
2) A
3) D
4) A
5) B
6) B
7) D
8) A
9) B
10) C
11) A
12) A
13) D
14) A
15) C
16) B
17) B
18) D
19) B
20) B
21) B
22) C
23) A
24) A
25) B
26) B
27) A
28) B
29) D
30) C
31) B
32) B
33) D
34) D
35) A
36) C
37) D
38) C
39) C
40) A
41) B
42) D
43) B
44) D
45) A
46) D
47) It is formed by diffusion of ions resulting in ionic imbalances that polarize the membrane. It is maintained by active transport processes.
48) mitochondria

49) Exons are amino acid-specifying informational sequences in genes. Introns are noncoding gene segments that provide a reservoir of ready-to-use DNA segments for genome evolution and a source of a large variety of RNA molecules.
50) A
51) They are assemblies of saturated phospholipids associated with sphingolipids and cholesterol. They are concentrating platforms for molecules needed for cell signaling.
52) E
53) ionic calcium
54) E
55) Hydrostatic pressure is the pressure of water exerted on the cell membrane. Osmotic pressure is created by different concentrations of molecules in a solution separated by the cell membrane. Because these pressures are exerted on the membrane they can be used by the cell to change the shape of the cell, regulate substances entering and exiting the cell, and bring about the polarity of the cell.
56) nuclear regions containing the DNA that issues genetic instructions for synthesizing ribosomal RNA
57) A
58) Free radicals are highly reactive chemicals that cause havoc in any cellular environment by reacting with things they should not. Cells with peroxisomes have enzymes specific to reducing free radicals into less reactive chemicals.
59) Most of the metabolic machinery of the cell is involved in protein synthesis since structural proteins constitute most of the cell dry material and functional proteins direct all cellular activities.
60) C
61) To modify, sort, and package proteins.
62) Without a nucleus, a cell cannot make proteins, nor can it replace any enzymes or other cell structures (which are continuously recycled). Additionally, such a cell could not replicate.
63) Free ribosomes make soluble proteins that function in the cytosol. Membrane-bound ribosomes produce proteins that are to be used on the cell membrane or exported from the cell.
64) The genetic code is the information encoded in the nucleotide base sequence of DNA. A sequence of three bases, called a triplet, specifies amino acid in a protein. The letters of the code are the four nucleotide bases of DNA designated as A, T, C, and G.
65) initiation, elongation, transcription
66) sodium
67) C
68) histones
69) The glycocalyx is the sticky, carbohydrate-rich area on the cell surface. It helps bind cells together and provides a highly specific biological marker by which cells can recognize each other.
70) B
71) Both diffusion and active transport mechanisms operate within the cell membrane to maintain a resting membrane potential.
72) Flu viruses and diphtheria toxins use receptor-mediated endocytosis. The virus can attach to the receptors or to the substances the receptors accept to "hitch a ride" into the cell.
73) Cytokinesis
74) B
75) Mitochondria.
76) transfer
77) 1. chemical insults and free radical formation (wear and tear theory)
    2. diminished energy production by free radical-damaged mitochondria
    3. progressive disorders in the immune system
    4. genetic programming
78) cell injury, cell oxygen deprivation, presence of excessive amounts of vitamin A in the cell
79) D
80) connexon

81) No. Because they are passive processes that do not require energy, they can occur in the absence of any cellular processes.
82) exocytosis
83) hypotonic
84) Some of the peroxisomes are oxidases that use oxygen to detoxify harmful substances. They are very good at neutralizing free radicals. Peroxisomes divide by simply budding. Lysosomes have powerful hydrolytic enzymes that will pretty much destroy anything they come in contact with. They are manufactured by the Golgi apparatus.
85) D
86) Microtubules
87) A
88) interphase
89) C
90) B
91) aquaporins
92) G1 - growth phase. The cell is metabolically active and the centriole begins to divide at the end of this phase.
S - DNA replicates itself. New histones are made and assembled into chromatin.
G2 - Enzymes and proteins are synthesized and centriole replication is completed. This is the final phase of interphase.
93) FALSE
94) FALSE
95) FALSE
96) FALSE
97) TRUE
98) FALSE
99) TRUE
100) FALSE
101) TRUE
102) FALSE
103) FALSE
104) TRUE
105) TRUE
106) TRUE
107) FALSE
108) FALSE
109) TRUE
110) TRUE
111) TRUE
112) FALSE
113) TRUE
114) FALSE
115) TRUE
116) A
117) A
118) A
119) A
120) A
121) A
122) A
123) B
124) C

125) B
126) A
127) A
128) B
129) A
130) B
131) B
132) A
133) A
134) A
135) B
136) A
137) Normal cells divide in two distinct events—mitosis and cytokinesis. Cancer cells divide wildly, which makes them dangerous to their host.
138) Ciliated cells that live in the respiratory tract propel mucus, laden with dust particles and bacteria, upward and away from the lungs. If the cilia are paralyzed, bacteria remain in the lungs and may cause infection.
139) A tap water enema is a hypotonic solution. Based on osmosis, water diffuses to the solution of higher concentration, leading to water intoxication.
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142) Fluid volume deficit occurs when the body loses both water and electrolytes from the extracellular fluid compartment. Fluid is initially lost from the intravascular compartment. Then fluid is drawn from the interstitial compartment into the intravascular compartment, depleting the interstitial compartment. To compensate for the decreased volume, the body then draws intracellular fluid out of the cells. This could lead to collapse and death.